
CASE REPORTS

REMIFENTANIL INFUSION PROLONGS SPINAL ANESTHESIA

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Abstract

Spinal anesthesia was given to a patient undergoing transurethral resection of prostate (TURP). A total of 3.2 ml of bupivacaine 0.5% mixed with fentanyl 20 mcg were used. The patient started experiencing sensation after 150 min. Remifentanyl intravenous infusion prolonged the duration of anesthesia for an additional 105 minutes.

Key words: TURP, spinal, anesthesia, remifentanyl.

Case Report

A 56 years old male, ASA III class, with a history of chronic prostatitis was scheduled for TURP/open prostatectomy. The patient was assessed in the ward the night before surgery where a history, examination and investigations were performed. The patient was a heavy smoker, smoking 40 cigarettes a day for 36 years, and occasionally consumed alcohol. The patient suffered from COPD (chronic bronchitis), coronary artery disease, and occasional chest pain with the last attack 2 days before surgery and an old MI 3 years ago. The patient was evaluated by a cardiologist who confirmed, after undergoing echocardiography showing acceptable EF of 58% and a negative treadmill test that the patient cardiac state was stable. There was also a history of gastro-esophageal reflux disease and an allergy to sulfa. The patient underwent varicocelelectomy in 1983 and 1985 in addition to a few recent uneventful cystoscopies under GA. Recent investigation results were as follows: ECG; normal sinus rhythm, CXR; increased bronchovascular markings, Blood work; Hb 13.9, Ht 42.3, platelets 219, WBC 20.5, BUN 5.1, creatinine 6.8, Na 134, K 4.2, Cl 104, PT 10.2, PTT 32.3, INR 0.9. Anesthesia plan and consent for spinal with back up general anesthesia were reviewed and documented.

In the operative theatre, standard monitors were attached which included, non-invasive blood pressure, pulse oximetry and ECG. Uneventful spinal anesthesia was induced in the sitting position using strict aseptic technique; local lidocaine 2% 2 ml was injected into the skin and subcutaneous

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area and then a 27G Whitacre spinal needle was advanced in the midline at the L3-L4 level, till clear CSF was obtained. A mixture of 0.5% bupivacaine 3.2 ml and fentanyl 20 mcg were injected slowly after careful barbotage. The patient was then turned to supine position which was adjusted to get a bilateral T10 level. A simple oxygen face mask at 5 liters per minute was used and end-tidal carbon dioxide catheter was applied under the mask. Thereafter, a screen was applied and the patient was put in the lithotomy position. Midazolam 2mg IV injection was given for sedation and surgery was done with the patient in lithotomy position. Bipolar resectoscope was used for surgery and normal saline for irrigation. Around 150 minutes after the subarachnoid injection, the patient started to feel movement at the surgery site and some mild pain. Remifentanyl intravenous infusion was started and titrated according to pain sensation, respiratory rate and sedation level until the end of the operation 105 minutes later. A two-way Foley's catheter was used for continuous irrigation.

A total of 1500ml of intraoperative fluids (crystalloids) were given: 1000ml Ringers Lactate and 500ml normal saline (NS) with a blood loss of around 500 ml. Furosemide 5mg IV was injected and NS was used for irrigation during the procedure instead of glycine. Intraoperative vital signs were stable. The patient received paracetamol 1gm intraoperatively, 30 min after starting remifentanyl, then morphine 9mg in the recovery room 50 min after the end of the remifentanyl infusion. Postoperative analgesic medications in the ward included pethidine 50 mg IM twice a day PRN if VAS \geq 40, paracetamol 1gm every 6 hours PRN if VAS \geq 30 and diclofenac sodium 75 mg IM twice a day PRN if VAS \geq 30. Postoperative vital signs were stable and the postoperative investigations and clinical course of the patient were satisfactory.

Discussion

By reviewing the literature, we could not find similar case reports to date. TURP patients often have multiple co-morbidities and spinal anesthesia is usually safer than general anesthesia as it assures better cardiorespiratory stability, decreases blood loss, and allows for monitoring of the patient's conscious level

as a warning sign of TURP syndrome in addition to providing early postoperative analgesia¹. Following the frequently used 1.5% glycine irrigation, hyponatremia and increased blood glycine levels contribute to development of TURP syndrome. The increased time of the operative procedure could predispose patients to more blood loss or more absorption of glycine, in addition to hyponatremia, hypothermia and the need for extended anesthesia time².

It is an anesthetic challenge to be obliged to induce general anesthesia to overcome patient pain complaint especially if his medical state is not suitable for that. The combination of fentanyl with heavy bupivacaine 0.5% for subarachnoid injection increases the duration of spinal block³. In our case, the patient started to feel movement of surgical instruments in addition to pain after 150 minutes of subarachnoid injection. Asking the surgeon about the expected time to finish, he said he needed only a few minutes to control bleeding. Remifentanyl infusion was started to help analgesia and sedation for the remaining expected short time. Remifentanyl dose was titrated according to respiratory rate and sedation level and to our surprise, the patient was comfortable, answering questions up to the end of the whole procedure, which lasted for an additional 105 minutes. The patient complaint of the sensation of surgical instruments followed by pain was relieved by the effect of remifentanyl infusion. This allowed an additional 105 min which saved the patient the risk of general anesthesia. In our case, isotonic sodium chloride (0.9% NaCl) was used instead of glycine for irrigation. Even when glycine 1.5% (15 mg glycine/ml) is used for irrigation, the use of remifentanyl infusion does not add to the problem. The remifentanyl formulation contains only 15 mg glycine per 1 mg remifentanyl powder⁴. Remifentanyl is a potent ultra-short acting mu-agonist which has been used for analgesia and sedation and as a component of balanced anesthesia. It has also been recently used as a sole analgesic for patient controlled analgesia during labor⁵. With proper titration, the sedative effect of remifentanyl is mild and patients can cooperate and answer questions during the procedure⁶. There is no cumulative effect with remifentanyl and it has been used to supplement multiple loco-regional anesthetic techniques⁷⁻⁹. Remifentanyl possibly will not mask the TURP syndrome; however, careful monitoring is needed to guard against overdosage and

potential respiratory depression. Being an ultra-short acting narcotic, remifentanil's context-sensitive half-life remains at 4 minutes after a 4 hour infusion and its possible side effects will disappear rapidly once the infusion is stopped¹⁰.

Nonetheless, this is the first time remifentanil been report to show value in prolongation of spinal

anesthesia. Further prospective controlled studies are still needed for stronger validation of use of remifentanil in spinal anesthesia prolongation. We think this case report will encourage us and others to try this technique with more patients and various operative procedures done under loco-regional anesthesia.

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